

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
9. (Cancelled)
10. (Cancelled)
11. (Cancelled)
12. (Cancelled)
13. (Cancelled)
14. (Cancelled)
15. (Cancelled)
16. (New) A circulating fluidized bed boiler comprising:
 - a firebox in which solid fuel is combusted in the presence of oxygen to generate flue gases containing solids;
 - a separator connected in fluid flow relation with the firebox for receiving the flue gases containing solids from the firebox and for separating the solids contained therein from the flue gases;
 - a solids recirculation loop connected in fluid flow relation with the separator for receiving from the separator the solids that are separated from the flue gases in the separator;
 - a solids extraction loop connected in fluid flow relation with the solids recirculation loop for receiving from the solids recirculation loop at least a portion of the separated solids that are received by the solids recirculation loop from the separator;
 - a fluidized bed containing fluidized solids connected both in fluid flow relation with the solids extraction loop for receiving from the solids extraction loop the portion of the separated solids that are received by the solids extraction loop from the solids recirculation

loop and in fluid flow relation with the firebox for recycling to the firebox the portion of the separated solids that are received by the fluidized bed from the solids extraction loop;

high temperature oxygen production membranes supported in the fluidized bed so as to be exposed to the heat from the portion of the separated solids that are received by the fluidized bed in order to thereby maintain the high temperature oxygen production membranes within a desired temperature range for purposes of extracting oxygen from air;

pressurized air supplied to the fluidized bed so as to enable the high temperature oxygen production membranes in the fluidized bed to extract oxygen from the pressurized air; and

an oxygen loop connected in fluid flow relation with the fluidized bed and with the firebox for supplying the oxygen extracted from the pressurized air in the fluidized bed to be employed for purposes of effecting in the presence thereof the combustion of the solid fuel in the firebox.

17. (New) The circulating fluidized bed boiler as claimed in claim 16 wherein the pressurized air that is supplied to the fluidized bed is conveyed after the oxygen is extracted therefrom to a waste heat boiler.

18. (New) The circulating fluidized bed boiler as claimed in claim 17 wherein the flue gases leaving the firebox are conveyed to a waste heat boiler that is combined in a sealed manner to the waste heat boiler to which the pressurized air is conveyed after the oxygen is extracted therefrom.

19. (New) The circulating fluidized bed boiler as claimed in claim 16 wherein the hot temperature oxygen production membranes are supported within the fluidized solids in the fluidized bed.

20. (New) The circulating fluidized bed boiler as claimed in claim 16 wherein the hot temperature oxygen production membranes are supported above the fluidized solids in the fluidized bed.

21. (New) A circulating fluidized bed boiler comprising:
- a firebox in which solid fuel is combusted in the presence of oxygen to generate flue gases containing solids;
 - a separator connected in fluid flow relation with the firebox for receiving the flue gases containing solids from the firebox and for separating the solids contained therein from the flue gases;
 - a solids recirculation loop connected in fluid flow relation with the separator for receiving from the separator the solids that are separated from the flue gases in the separator;
 - a solids extraction loop connected in fluid flow relation with the solids recirculation loop for receiving from the solids recirculation loop at least a portion of the separated solids that are received by the solids recirculation loop from the separator;
 - high temperature oxygen production membranes supported on the lower periphery of the firebox so as to be exposed to sufficient heat to thereby maintain the high temperature oxygen production membranes within a desired temperature range for extraction of oxygen from air;
 - air supplied to the high temperature oxygen production membranes for purposes of effecting the extraction by the high temperature oxygen production membranes of oxygen from the air; and
 - an oxygen loop for supplying the oxygen extracted from the air by the high temperature oxygen production membranes to the firebox to be employed for purposes of effecting in the presence thereof the combustion of the solid fuel in the firebox.
22. (New) The circulating fluidized bed boiler as claimed in claim 21 wherein the high temperature oxygen production membranes are placed outside of the firebox.
23. (New) The circulating fluidized bed boiler as claimed in claim 21 wherein the high temperature oxygen production membranes are placed along the inside walls of the firebox.
24. (New) A circulating fluidized bed boiler comprising:
- a firebox in which solid fuel is combusted in the presence of oxygen to generate flue gases containing solids;
 - a separator connected in fluid flow relation with the firebox for receiving the flue gases containing solids from the firebox and for separating the solids contained therein from the flue gases;

a solids recirculation loop connected in fluid flow relation with the separator for receiving from the separator the solids that are separated from the flue gases in the separator;

a solids extraction loop connected in fluid flow relation with the solids recirculation loop for receiving from the solids recirculation loop at least a portion of the separated solids that are received by the solids recirculation loop from the separator;

high temperature oxygen production membranes supported as an assembly resting on the hearth of the firebox so as to be exposed to sufficient heat to thereby maintain the high temperature oxygen production membranes within a desired temperature range for extraction of oxygen from air;

air supplied to the high temperature oxygen production membranes for purposes of effecting the extraction by the high temperature oxygen production membranes of oxygen from the air; and

an oxygen loop for supplying the oxygen extracted from the air by the high temperature oxygen production membranes to the firebox to be employed for purposes of effecting in the presence thereof the combustion of the solid fuel in the firebox.

25. (New) The circulating fluidized bed boiler as claimed in claim 24 wherein the high temperature oxygen production membranes consist of very long tubes supported by intermediate plates.

26. (New) The circulating fluidized bed boiler as claimed in claim 24 wherein the high temperature oxygen production membranes consist of short tubes with intermediate chambers.

27. (New) The circulating fluidized bed boiler as claimed in claim 24 wherein the high temperature oxygen production membranes consist of concentric tubes of which the inner tube serves as support for the outer tube.

28. (New) The circulating fluidized bed boiler as claimed in claim 27 wherein a space is provided between the two tubes.

Amendments to the Specification:

On Page 1, before the first paragraph beginning in line 1 insert:

--OXYGEN-PRODUCING OXYCOMBUSTION BOILER

BACKGROUND OF THE INVENTION--

On Page 2, between the paragraph ending in line 4 and the paragraph beginning in line 6 insert:

--SUMMARY OF THE INVENTION—

On Page 5, between the paragraph ending in line 33 and the paragraph beginning in line 35 insert:

--BRIEF DESCRIPTION OF THE DRAWINGS—

On Page 6, between the paragraph ending in line 26 and the paragraph beginning in line 28 insert:

**--DETAILED DESCRIPTION OF THE
PREFERRED EMBODIMENT—**